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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,294	12/01/2003	Toru Marumoto	9333/360	2919

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EXAMINER

COLUCCI, MICHAEL C

ART UNIT	PAPER NUMBER
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2626

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/725,294	Applicant(s) MARUMOTO ET AL.	
	Examiner Michael C. Colucci	Art Unit 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>12/01/2003</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Response to Arguments

Applicants arguments with respect to claims 1-20 have been considered but are moot in view of the new grounds of rejection.

With respect to claims 1, 4, 8, 10, 14, and 18:

The second reference (Borth, US 4630304) teaches a solution where 2 microphones are used, where the first microphone picks up the noisy speech signal and the second microphone picks up only the background noise. The received speech into the first microphone is the first signal and the output from the second microphone acquiring only background noise is the second signal. The second reference (Borth) also describes effectively subtracting an estimate of the background noise signal from the noisy speech signal. The first reference (Urbanski US 544250) also teaches channel gains dependent upon the signal to noise ratio as well as background noise being subtracted from the noisy speech signal by reducing the gains of the individual channel band pass filters. The adjustment of gain is performed in response to background noise. Both the first and second references together give proper motivation to reject claims 1-20.

Response to Amendment

Applicants amendment filed July 19, 2007 overcomes the following rejection/objection:

- 102 rejection of claims 1-4, 6-9, 14-20.
- 103 rejection of claims 5, 10-13.

In response to applicants amendment of claims 1, 4, 8, 10, 14, and 18:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in **Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966)**, that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows: (See MPEP Ch. 2141)

- a. Determining the scope and contents of the prior art;
- b. Ascertaining the differences between the prior art and the claims in issue;
- c. Resolving the level of ordinary skill in the pertinent art; and
- d. Evaluating evidence of secondary considerations for indicating obviousness or nonobviousness.

2. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Urbanski, US 5,544,250 A in view of Borth et al, US 4,630,304.

Re claim 14, a speech communication apparatus for bi-directional speech communications, comprising:

a speaker for outputting received speech;

a microphone for collecting speech to be transmitted;

(Urbanski discloses the input and output combination of a "speakerphone option to a cellular mobile radio telephone "as well as a "mobile hands-free microphone", col. 1 Line 44-49)

background sound level measurement operable to measure the level of background sound; and

received-speech clarifying section operable to adjust a gain for the received speech to be outputted to the speaker according to the level of the background sound measured by the background sound level measurement means,

(Urbanski discloses the method of "filtering environmental noise from the desired speech signal", Urbanski col. 1 line 21-24. Environmental noise is construed as background sound or noise. Urbanski illustrates background noise extraction, signal and noise energy measurement, and signal gain and adjustment relative to the signal, See Urbanski Fig. 2. Urbanski teaches individual gain parameters continuously being updated in response to the changing background noise environment (Urbanski col 1 line 56-64). However Urbanski fails to teach two signals, where one signal is the "received speech signal" and the second signal being the "background sound level". Borth teaches effectively subtracting an estimate of the background noise signal from the noise speech signal, where a first microphone picks up a signal with both noise and speech and a second microphone that picks up only the background noise, Borth col 1 line 25-39. Therefore, the combined teaching of Urbanski and Borth would have rendered

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obvious a speech clarifying section that adjusts a gain of the output signal according to the background noise signal.)

the background sound level measurement calculator comprising:

a delay section operable to delay the output of the first background-sound microphone by the period corresponding to the delay time between transmission speech mixed into the output of the first background-sound microphone and transmission speech mixed into the output of the second background-sound microphone,

(In light of the specification, there is no distinct description of the delay operable means in claim 14, therefore a delay is construed as being inherent for two transmission sequences where processing occurs in between. Particularly when two microphones are present and not equidistance from the sound source, there will be an inherent delay.)

an adaptive filter operable to estimate transmission speech mixed into the output of the delay section,

(The combined teaching discloses noise, energy, and signal to noise estimators, and signal gain calculation, which in itself will be interpreted as an adaptive filter, since an adaptive filter constantly optimizes a system and it's frequency response, see Urbanski Fig. 2, Col. 3 line 30-52)

an adder operable to subtract the transmission speech estimated by the adaptive filter from the output of the delay means, and

(By taking the difference of transmission speech and background sound, the background sound is suppressed. The output having suppressed noise

implies reduction or subtraction of noise. The combined teaching discloses "a signal combiner, operatively coupled to the signal divider and the signal level adjuster, for combining the plurality of adjusted signals to produce an output signal having suppressed noise", Urbanski Fig. 2, col. 15 line 34-37, also Col. 1 line 29-35)

background sound level calculation section operable to calculate the level of the output of the subtracting means and for outputting the result as the level of the background sound.

(The combined teaching discloses background noise measurement, Urbanski col. 5 lines 7-12, Fig. 2).

Re claim 15, the speech communication apparatus of to claim 14, wherein the adaptive filter estimates the transmission speech according to the difference between the output of the delay means and the transmission speech estimated by the adaptive filter (Urbanski Fig. 2, col. 15 line 34-37).

Re claim 16, a speech communication apparatus according to Claim 14, further comprising; a received-speech-level measurement section operable to measure, at each predetermined frequency band the level of a received-speech signal received in the speech communications, wherein the background sound level measurement section measures the level of the background sound in each predetermined frequency band, and the received-speech clarifying section performs loudness compensation in which the gain for the received-speech signal is adjusted in each predetermined frequency band. (See Urbanski Fig. 2, col. 5 line 7-12, col. 15 line 27-33)

Re claim 17, the speech communication apparatus of claim 14, wherein the speech communication apparatus is a portable, mobile telephone for performing the speech communications by radio communication. (See Urbanski Col. 1 line 44-49, Col. 4 line 16-23, as well as Fig. 1, Col. 1 line 21-24).

Claim 1 is closely related to claim 14 but is not further substantially limited. Therefore claim 1 has been analyzed and rejected with the same arguments presented in claim 14. (See analysis for claim 14)

Claim 2 is closely related to claim 16 but is not further substantially limited. Therefore claim 2 has been analyzed and rejected with the same arguments presented in claim 16 (See analysis for claim 16).

Claim 3 is closely related to claim 17 but is not further substantially limited. Therefore claim 3 has been analyzed and rejected with the same arguments presented in claim 17 (See analysis for claim 17).

Claim 4 is closely related to claim 14 but is not further substantially limited. Therefore claim 4 has been analyzed and rejected with the same arguments presented in claim 14 (See analysis for claim 14). Manipulating a frequency characteristic of a signal is broad enough to be construed as being inherently part of the task of the adaptive filter. The proximity effect is construed as the effect of noise on a system with respect to the distance of the sound source. The proximity effect will be reduced as a result because it is an effect from noise in itself.

Re claim 5, Urbanski fails to teach whether the microphone used is bidirectional or unidirectional. However, Examiner takes Official Notice that it is

well known to implement the use of omni-directional, unidirectional, or bidirectional microphones in the related art. The term microphone disclosed in general, is encompassing of any microphone polar pattern including but not limited to unidirectional or bidirectional microphone. Therefore, it would have been obvious to utilize a microphone with a particular polar pattern as a matter of choice if and when directional preference is desirable.

Claim 6 is closely related to claim 16 but is not further substantially limited. Therefore claim 6 has been analyzed and rejected with the same arguments presented in claim 16 (See analysis for claim 16).

Claim 7 is closely related to claim 17 but is not further substantially limited. Therefore claim 7 has been analyzed and rejected with the same arguments presented in claim 17 (See analysis for claim 17).

Claim 8 is closely related to claim 14 but is not further substantially limited. It also is closely related to claim 4 but is not limited further. Therefore claim 8 has been analyzed and rejected with the same arguments presented in claim 14 and claim 4 (See analysis for claim 14 and claim 4). In addition, a high pass or band pass filter will reduce if not eliminate the levels of lower frequency components present in a signal (Urbanski Col. 1 line 29-35).

Re claim 9, the combined teaching discloses "the microphone, the audio processor, the transmitter, and the antenna are each well known in the art" (Col. 4 line 35-36). The type of signal transmitted is a speech signal for speech communications.

Re claim 10, the scope of claim 10 is substantially similar to claims 14, 16 and 17. Hence, the analysis and rejection for those claims apply here. In particular, the combined teaching illustrates background noise extraction, signal and noise energy measurement, and signal gain and adjustment relative to the signal, See Urbanski Fig. 2. The combined teaching teaches individual gain parameters continuously being updated in response to the changing background noise environment (Urbanski col 1 line 56-64). However Urbanski fails to teach two signals, where one signal is the "received speech signal" and the second signal being the "background sound level". Borth teaches effectively subtracting an estimate of the background noise signal from the noise speech signal, where a first microphone picks up a signal with both noise and speech and a second microphone that picks up only the background noise, Borth col 1 line 25-39. Furthermore, Urbanski fails to teach that two microphones were used in the suppression of background noise, where the microphones were spaced at a distance away from one another with the purpose to subtract background noise from the speech signal. Borth et al discloses a pair of microphones where the first microphone picks up the input speech and the second microphone picks up only the background sound.

Therefore, the combined teaching of Urbanski and Borth et al would have rendered obvious utilization of a device with two microphones as claimed for collecting speech and background noise suppression (Borth, Col. 1 line 29-35).

Re claim 11, has been analyzed and rejected with respect to claim 5.

Re claim 12, has been analyzed and rejected with respect to claim 16.

Re claim 13, has been analyzed and rejected with respect to claim 17.

Claim 18 has been analyzed and rejected with respect to claims 4. The combined teaching discloses both the apparatus and method.

Claim 19 has been analyzed and rejected with respect to claims 17. The combined teaching discloses both the apparatus and method.

Claim 20 has been analyzed and rejected with respect to claims 16. The combined teaching discloses both the apparatus and method.

Examiner's Note

The referenced citations made in the rejection(s) above are intended to exemplify areas in the prior art document(s) in which the examiner believed are the most relevant to the claimed subject matter. However, it is incumbent upon the applicant to analyze the prior art document(s) in its/their entirety since other areas of the document(s) may be relied upon at a later time to substantiate examiner's rationale of record. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). However, "the prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed...." In re Fulton, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004).

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Please note: The art unit listed on applications sent on or after 8/20/2007 has changed from 2609 to 2626. Examiner assigned to case still remains.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Colucci whose telephone number is (571)-270-1847. The examiner can normally be reached on 7:30 am - 5:00 pm, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571)-272-7332. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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